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**\*Comparative Study of Different Methods of Testing Brass-Ware (Tubes) for Season-Cracking.** L. A. Glikman and S. P. Goncharov. (*Zhurnal Tekhnicheskoy Fiziki (J. Tech. Physics)*, 1935, 8, 10, 1598-1612). (In Russian.) A study of the methods (mercury, ammoniac, cutting of ring sections), for detecting the tendency of brass tubes to season crack showed that for factory control tests, the last named method is best, and affords a satisfactory explanation of the mechanism of cracking. N. A.

ASME 3.1.1 METALLURGICAL LITERATURE CLASSIFICATION

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Estimation of residual stress by the method of hardness  
determination. L. A. Glikman. *Zavodskaya i Lab.* 5, 63-64  
1956. Preliminary results of a study of the relation  
existing between the stresses and the hardness of metals  
deformed with the aid of the Herbert pendulum are discussed.  
Chas. Blum

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

100-117-1114

100-117-1114

Comparison of the methods of Sachs and MacKee for  
determining the permanent set in heavy-wall tubes. 1.  
Chikunov, Zaslavskii, *Izv. Vuzov, Fizika*, 1960, No. 1, p. 11. The  
method of Sachs (1922, 1930) is considered superior to  
that of MacKee (see *Journal of Metals* 1930). C. B.

CP

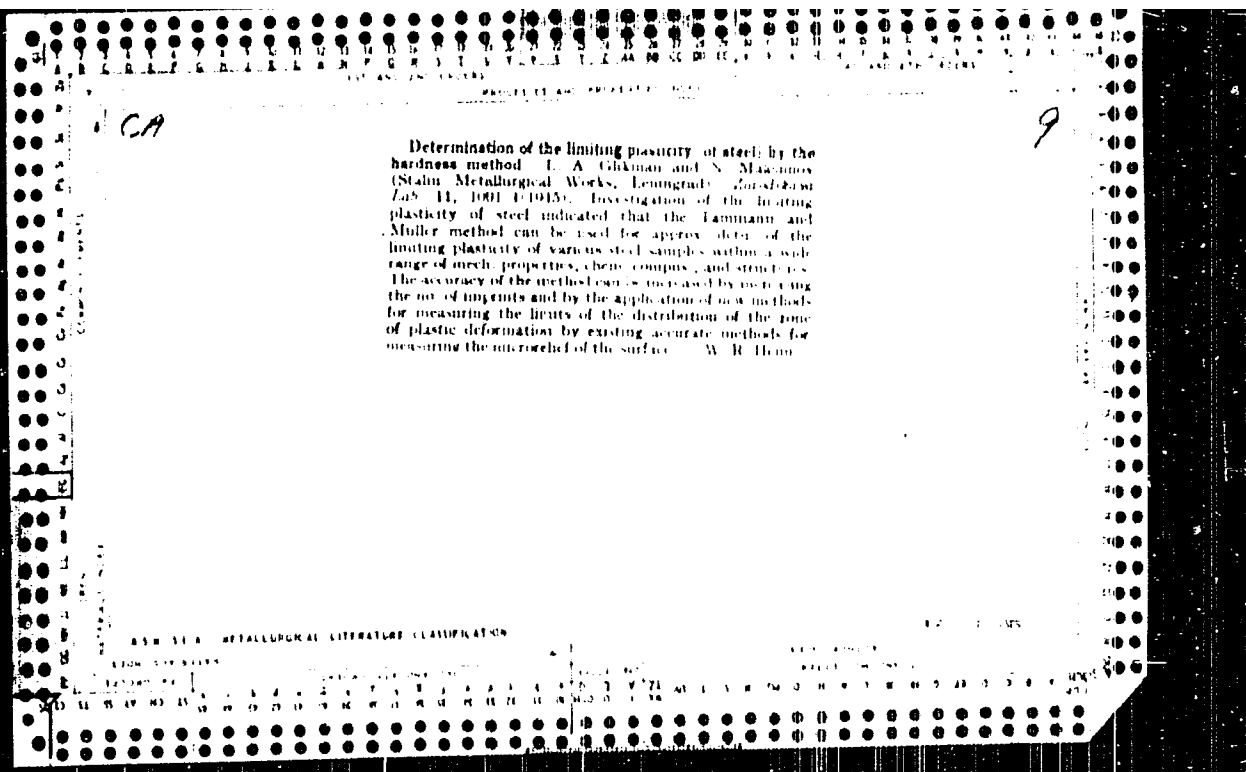
1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

The influence of a cyclic percussion stress with uni-  
lateral tension and pressure on the brittleness of steel.  
I. A. Glikman. *J. Tech. Phys. U. S. S. R.* 7, 1154 (1937).  
1937. *Chem. Zentr.* 1938, II, 389. When steel is sub-  
jected to cyclic percussion the brittleness is reduced with  
increase in the no. of blows. This reduction in brittleness  
is greater the greater the energy of the blows and the less  
tough the steel. With the same percussion energy the  
reduction in brittleness produced by cyclic percussion is  
dependent upon the type of deformation. The brittle-  
ness is reduced to a greater degree by repeated blows under  
pressure than by repeated blows under tension. The re-  
duction in brittleness is still observed up to the beginning  
of a noticeable crack formation through fatigue. Crack  
formation through fatigue begins when the no. of blows  
struck is essentially less than that of half the life of the  
test. With increase in the no. of blows the fatigue crack-  
ing increases uninterruptedly. The toughness of the steel

is not essentially increased as the no. of blows is increased.  
The increase in toughness that is produced is definitely  
more marked in the first stages of the test than later.  
The impact resistance of the steel, notched-bar test, is  
reduced by the cyclic percussion, a sharp drop occurring  
after a definite no. of blows. M. G. Moise.

ASA 31.4 METALLURGICAL LITERATURE CLASSIFICATION

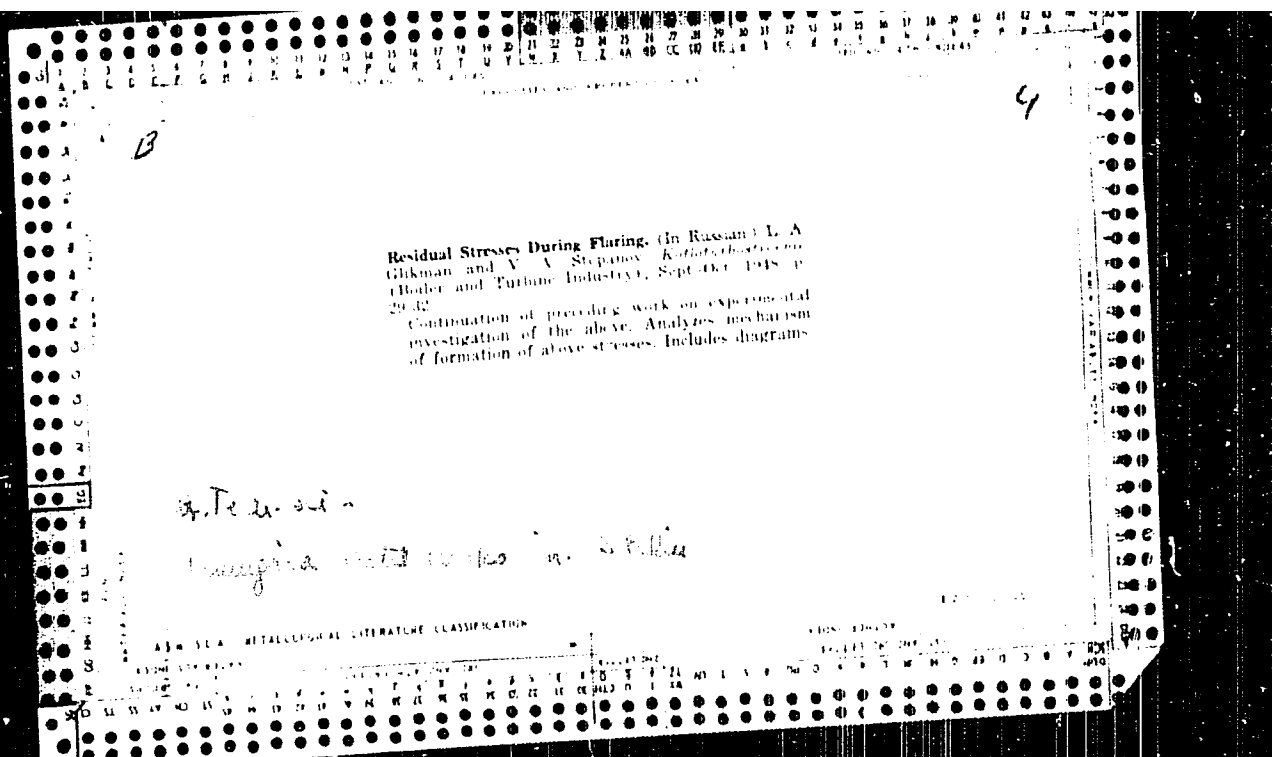


13

14

Stress-Corrosion Cracking of High-Chromium Steel  
(EZhZ). (In Russian) L. A. Glikman and V. A.  
Stepanov. *Boiler and Turbine Construction* (USSR), Feb. 1947, p. 19-21.

Describes cases of the failure of bushings on the  
shafts of turbines. It is established by experiment  
that the failure of the above steel was caused by  
stress-corrosion cracking. A mechanism is pro-  
posed for the latter.

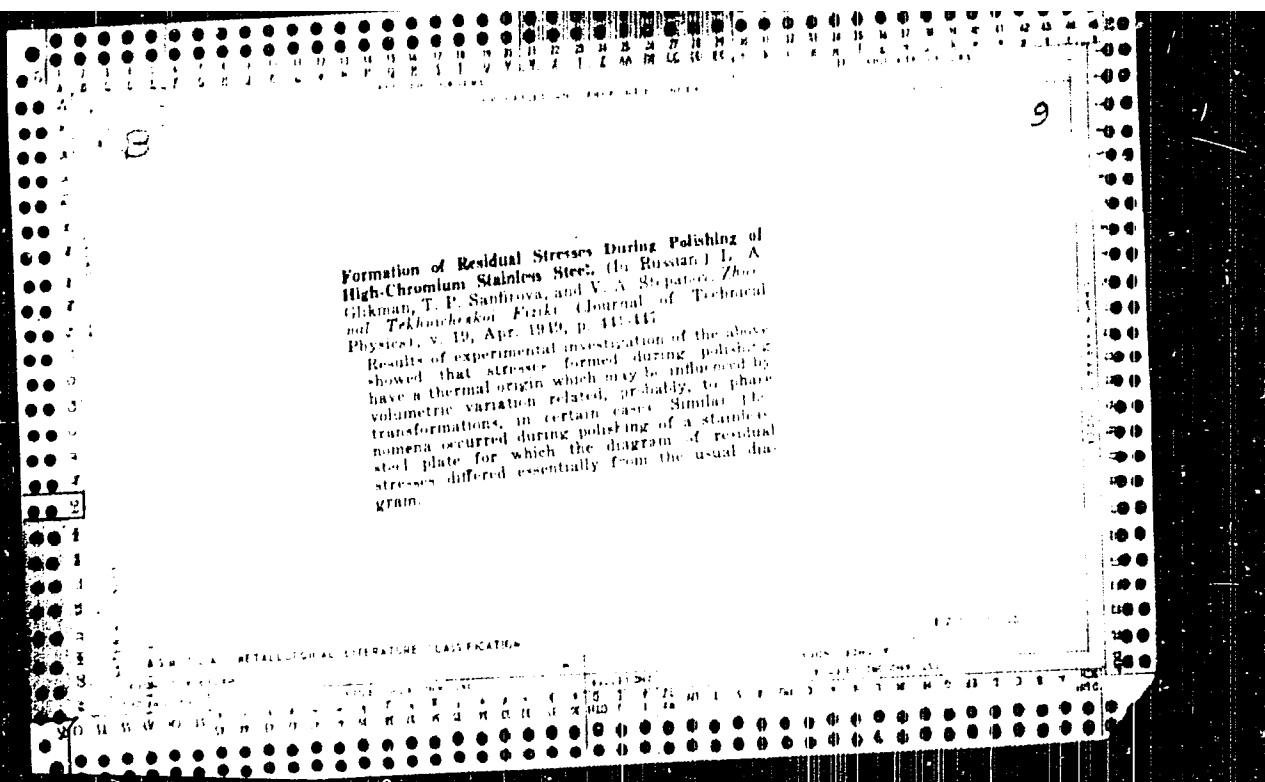


13

Formation of Residual Stresses of the First Order  
During Tensile Stress. II. Problem of the Presence of  
a Weakened Surface Layer. (In Russian) L. A. Glik  
man, T. P. Sanfirova, and V. A. Stepanov. *Zhurnal  
Tekhnicheskoi Fiziki* (Journal of Technical Physics),  
v. 19, Mar. 1949, p. 327-335.

The above was studied using an accurate method  
of testing on various shapes of test specimens.  
The appearance of residual stress during testing  
of specimens of carbon steel above their yield point  
was established. By analysis of the results (tabu-  
lated and charted), the existence of thin weakened  
surface layers was established.





Variation of Damping Under Cyclic Stresses Below and Above the Fatigue Limit. (The Problem of the Physical Nature of Fatigue.) (In Russian.) L. A. Glikman, V. A. Zhuravlev, and T. W. Sorokov. *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), V. 19, Apr. 1949, p. 415-416.

The above was investigated using a specially designed apparatus for two low carbon and one high Cr stainless steel at different stress amplitudes above and below the fatigue limit. The effects of intermediate aging and annealing on the above variations indicated. Data are tabulated and charted. 15 refs.

2553\* The Research of G. V. Uzhik in the Fields of Strength and Plasticity. (In Russian.) E. A. Glikman, N. N. Davidenkov, S. V. Seronin, Ya. B. Fridman, N. A. Shaposhnikov, N. P. Shepov, and Ya. I. Yagin. *Izvestiya Akademii Nauk SSSR* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences, Nov. 1950), p. 1709-1715.

Analyzes theoretical bases of Uzhik's work on determination of tear resistance and indicates fallacies in his assumptions. Also attempts to show that Uzhik's theories of strength and plasticity are unfounded. The entire article is in answer to Uzhik's refutation of previous criticisms of his work. 25 ref.

GLIKMAN, I. A.

USSR/Metals - Stress

May 51

"Effect of Cold Working on Fatigue Limit of Steel,"  
I. A. Glikman, N. N. Davidenko

"Zhur Tekh Fiz" Vol XXI, No 5, pp 573-577

Examd effect of compressive plastic deformation on  
fatigue limit of EZh-1 steel with high chromium con-  
tent. According to theory of orientative effect of  
micro-defects, one should have expected drop of  
fatigue limit. Instead found a rise reaching 13.5%.  
Submitted 1 Oct 50.

LC

182T100

GUSEL'SHCHIKOV, M.K., professor; GLIKMAN, L.A., redaktor: Flaum, M.Ya.,  
tekhnicheskii redaktor.

[Effect of mechanical and thermal factors on the strength of  
marine boilers] Vliianie mekhanicheskikh i termicheskikh vozd-  
vii na prochnost' sudovykh kotlov. Moskva, Izd-vo "Morskoi transport,"  
1952. 55 p. [Microfilm] (MIRA 7:10)  
(Steam boilers, Marine)

GLIKMAN, L. A.

USSR/Metals - Anomalous Extinguishment

Feb 52

"Anomalous Variation of Extinguishment of Steels  
With Low Carbon Content During Rising Temperature,"  
L. A. Glikman, K. V. Shishokina

"Zhur Tekh Fiz" Vol XXII, No 2, pp 300-307

Attempts to clarify phys nature of specified prob-  
lem. Phenomenon is particularly conspicuous in  
temp range 50-150°C with a max at 100°C. It is  
assumed that anomalous variation of decrement is  
connected to diffusion processes of Ni-atoms, dis-  
solved in alpha-iron. Indebted to N. N. Daviden-  
kov. Received 31 Jul 51.

209187

1. GLIKMAN, L. A., TEKHT, V. P.
2. SSSR (600)
4. Metals-Fatigue
7. Physical nature of the fatigue process.  
Dokl. AN SSSR 86 No. 4, 1952

Carbon steel 35 and stainless steel Zh-2 were investigated by method of V. I. Iveronova and T. P. Kostetskaya (see Zhur. Tekh. Fiz. 10, 4, 1940) using radiograms due to cobalt and chromium rays, which produced interference pattern on film and showed distortion of atomic lattice at deformation. Fatigue is a process similar to that occurring at deformation and is due to "weakened" grains. Presented by Acad I. P. Bardin 5 Aug 52.

252T44

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

# USSR

Effect of chromium plating on the damping decrement.  
A. Glikman, M. M. Pilyavskaya, and A. N. Borzhikov,  
Zhur. Tekh. Fiz. 33, 464-70 (1963).—A bright layer (0.12  
mm.) of Cr on steel increased the abs. value of the logarithmic  
decrement by 0.4-0.6%. The abs. increase of decre-  
ment was independent of the amplitude of the voltage.  
Decrease in the thickness of the Cr layer decreased the damp-  
ing increment. At 500°, the damping of Cr-plated samples  
was practically the same as for unplated samples. The  
steels studied were: 30KhMA (C 0.33, Cr 1.1, Mn 0.33%);  
21N5A (C 0.2, Si 3, Mn 0.37, Cr 0.13, Ni 4.6%); Zh-1  
(C 0.14, Cr 12.32%); Zh-3 (C 0.21, Cr 13.35%); EI128  
(austenitic) (C 0.4, Si 0.55, Mn 0.5, Cr 13.89, Ni 36.85, W

2.41%). The damping decrement was recorded photoelec-  
trically. A. P. Kotichy



GLIKMAN, L., doktor tekhnicheskikh nauk; ZOBACHEV, Yu.

Ways of increasing the life of ship propellers. Mor. i rech. flot  
14 no. 4: 20-22 Ap 1954. (MLHA 7-5)  
(Propellers)

GLIKMAN, L. A.

FD 361

USSR/Physics - Oscillations in Metals

Card 1/1

Author : Glikman, L. A. and Kheyn, Ye. A.

Title : Effect of cold hardening and aging on attenuation of oscillations of low-carbon steel

Periodical : Zhur. tekhn. fiz. 24, 400-411, Mar 1954

Abstract : Effect of cold hardening on variation of attenuation, related to amplitudes of stresses was investigated by stretching specimens to elongation of 2 to 12.5% and subsequent heating within 100-650° C. The obtained results confirm assumptions that attenuation is affected by two types of processes: diffusional and local plastic deformation.

Institution :

Submitted : October 14, 1953

PHYSICS, I. . .

FD-379

USSR/Physics - Oscillations in Metals

Card 1/1

Author : Glikman, L. A., Kheyn, Ye. A.

Title : Effect of cold working and aging on attenuation of oscillations of copper. II

Periodical : Zhur. tekhn. fiz. 24, 560-565, Mar 1954

Abstract : Studies attenuation of copper in the range of stress amplitudes from 0.05 to 1 kg/sq mm. Effect of cold hardening by tension was investigated on round specimens at degrees of plastic elongation from 1.5 to 28% with subsequent heating in the 100-400° C range. Concludes that in general effect of cold hardening and aging on attenuation of copper is similar to the effect of the same factors on attenuation of low-carbon steel, except changes in attenuation at stress amplitudes close to zero. Diagrams.

Institution :

Submitted : October 14, 1953

GLIKMAN, L.A., doktor tekhnicheskikh nauk; ZOBACHEV, Yu.Ye., inzhener.

Ways to increase the life of a ship's propeller shaft.  
Trudy TSNIIRF no.28:3-44 '54. (MLRA 9:1)

(Shafts and shafting) (Corrosion and anticorrosives)

GLIKMAN, L.A., doktor tekhnicheskikh nauk; TEKHT, V.P., kandidat tekhnicheskikh nauk; ZOBACHEV, Yu.Ye., inzhener.

Problem of the physical nature of cavitation breakdowns. Trudy TSNIIRF no.28:45-59 '54.

(Cavitation) (Metallography)

GLIKMAN, L.A.; BOGORAD, L.Ya.; SUPRUN, L.A.; GAKMAN, E.L.; ZHUKOVA, V.I.,  
inzh.; red.; FREGHER, A., tekhn.red.

[The effect of chrome plating on fatigue and corrosion resistance  
of steel] Vliianie khromirovaniia na ustalostnuiu i korrozionno-  
ustalostnuiu prachnost' stali. Leningrad, 1955. 9 p. (Leningradskii  
dom nauchno-tekhnicheskoi propagandy. Informatsionno-tekhnicheskii  
listok, no.84(772)) (MIRA 10:12)

(Chromium plating)

GLIKMAN, L.A.; DAVIDENKOV, N.N., retsenzent; SKORCHELLETTI, V.V., kandidat  
tekhnicheskikh nauk, redaktor; POL'SKAYA, R.G., tekhnicheskij redaktor

[Mechanical strength and corrosion resistance of metals] Korroziionno-  
mekhanicheskaya prochnost' metallov. Moskva, Gos. nauchno-tekhn. izd-  
vo mashinostroit. lit-ry, 1955. 174 p. [Microfilm] (MLRA 8:2)

1. Deystvitel'nyy chlen AN USSR (for Davidenkov).  
(Strength of materials) (Corrosion and anticorrosives)

GLIKMAN, L.A., doktor tekhnicheskikh nauk, professor; SUPRUN, L.A.,  
inzhener.

Effect of cathode polarization with protector and external currents on an increase of fatigue strength under corrosion. Metal-  
loved. i obr.met. no.6:10-15 D '55. (MLRA 9:3)

1. Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota.  
(Corrosion and anticorrosives) (Metals--Testing)



FD-300

USSR/Physics - Cavitation

Card 1/- Pub. 193 - 14/23

Author : Glikman, L. A.; Teicht, V. P.; Zebachev, Yu. Ye

Title : Problem of the physical nature of cavitation destruction

Periodical : Zhur. tekh. fiz., 29, February 1970, 200-210

Abstract : The authors state that although many authors (e.g., I. M. Netzer, Usp. Fiz. nauk, 32, No 2, 1948; I. M. Vlasovskiy, Korroziiya i eroziya sudovyykh grebnykh vintov [Corrosion and erosion of ship's screw propellers], Ship Industry Press, 1949; M. G. Kornfeld, Uprugost' i pruchnost' zhidkostey [Elasticity and stability of fluids], GITEL, 1954; V. A. Konstantinov, Dokl. AN SSSR, 4, No 3, 1947) there are no generally accepted ideas as to the physical nature of cavitation destruction and as to the mechanism governing the occurrence of this process. They present new experimental data in an investigation of the surface layer of specimens subjected to cavitation action in a liquid medium. They emphasize in initial or earlier stages of destruction they emphasize the role of microbubbles and microstreamlines.

Card 2/2

FD-304b

Abstract : namely on various steels, brass, and nonferrous alloys. They claim that their results permit sharpening existing concepts of cavitation destruction; they present photographs and detailed conclusions (e.g. establishment of plastic deformation in the surface layer etc.). Nine references: e.g. I. A. Glikman, *ibid.*, 7, 14, 1934, 1937.

Institution : -

Submitted : May 16, 1954

17 1957-17 1957

Translation from: Referativnyy zhurnal, Metallografiya, 1957, No. 1, p. 26, USSR.

AUTHORS: Glikman, L. A., Zolotarev, Yu. Ye.

TITLE: The Effect of Cathodic Polarization, Accomplished by Means of an External Current and an Mg Protector, on the Cavitation Stability of Carbon Steel in Tests Performed on a Magnetostriction Vibrator. (The Problem of the Physical Nature of Cavitation). [Vliyaniye katodnoy polarizatsii, yaveshchayemykh na magnitnyy protektor na kavitatsionnuyu ustoychivost' angledobnoy stali pri ispytaniy na magnostriksionnom vibratore, kak vopros o fizicheskoy prirode kavitatsionnogo razruheniya].

PERIODICAL: Tr. Tsentr. n-ta in-ta morsk. floty, 1956, No. 5, pp. 1-7.

ABSTRACT: The testing of annealed carbon steel (0.25 percent C) was carried out in a magnetostriction vibrator, in which the specimen was caused to vibrate with an amplitude of 76  $\mu$  at a frequency of 8000 cps, in sea water (Black Sea composition) and also for the sake of comparison in tap water. The loss in weight was taken as the criterion of cavitation stability. During cathodic polarization (P) the current density was held in the range

Card 1/3 between 0.6 and 4.2  $\text{mg}/\text{cm}^2$ . In addition, tests were also carried

100 1987-11 15012

The Effect of Cathodic Polarization, Accomplished by Means of (Current)

out under conditions of anodic I; graphite served as the material for the anode. It was established that, with increased density of the cathodic current, the rate of cathodic break down (CB) is considerably lowered, but that at maximum current densities the weight loss in sea water is very significant and that it comprises approx. 70 percent of the weight lost in fresh water during CB. The large extent of CB, approaching the value for corrosion resistant materials with approximately identical mechanical properties, points to the great importance of the mechanical aspect. Results obtained also reveal the relatively high corrosion losses during CB, which can also be explained by the mechanical aspect. The mechanism of this process consists in the appearance of cyclic plastic deformation (PD) in individual microvolumes, which is a result of the mechanical action of recurrent single impacts. The PD results in a considerable electrochemical non-homogeneity, the primary condition for which is the simultaneousness of the PD process and the action of the medium. The electrochemical non-uniformity is also intensified by microscopic regions of a PD which does not occur simultaneously throughout the area subjected to cavitation. It is shown that the employment of Mg protectors restores the fatigue strength of specimens cut

Card 2/3

1. Steel-Cavitation-Test results
2. Polarization-Applications
3. Magnetostriction-Applications
4. Vibrating mechanisms-Applications

The Effect of Cathodic Polarization, Accomplished by Means of (cont.)

subjected to simultaneous corrosive action of salt water to 90 percent of its value in air. The fact that Mg protectors have no effect upon CB is an indication that electrochemical non-homogeneity is considerably greater in CB than it is in a fatigue process. At greater current densities the anodic P process resulted in a significant acceleration of the CB owing to the anodic dissolution of specimens being tested.

L. G.

Card 3/3

1957, 1957, 1957

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 1, p 155 (USSR)

AUTHORS: Glikman, L. A., Babayev, A. N.

TITLE: Effective Application of the Zak's Method in Determining Residual Stresses in Solid and Hollow Cylinder. (Efektivnoye primeneniye sposoba Zaka pri opredelenii otkazhivnykh napryazheniy v sploshnykh i polychinnykh tsilindrakh)

PERIODICAL: Tr. Tsentr. n. i. in t. morsk. flot., 1956, Nr 5, pp 17-19

ABSTRACT: The application of a modified Zak's method is described which is employed in determining a complete characteristic diagram of the residual stresses (RS) in a cylinder (disc) by means of successive boring and turning. Also described are the results of a comparison of magnitudes of deformation, measured by means of an optical gage and wire strain gages (SG). The procedure presented for the calculation of the RS, in the case of the successive employment of boring and turning operations, does not introduce any significant additional complications, as compared with the usual RS computations according to the Zak's method. It is shown theoretically that preliminary boring results in the removal of the remaining part of the cylinder, of axial RS that are constant

Card 1/3

1957-11-28-16

# Rational Employment of the Zaks' Method (cont.)

over the cross section and varying tangential and radial stresses. Experimental work was performed on discs (D) 105 mm in diameter and 15 mm thick, made of grade 3 steel taken from cylindrical blanks 600 mm long and 110 mm in diameter. RS were induced in the blanks by heating them to a temperature of  $t_{500}$  and keeping them at that temperature for five hours; this was followed by quenching in water in a vertical position. 8 D's were cut from the center portion of the blank and, for purposes of comparison, several of them were investigated by the usual Zaks' method by determining deformation from a measurement of the outer diameter by means of a horizontal optical gage. It is shown experimentally that SG's are as accurate as the optical gage and that they simplify considerably the process of measuring deformations and determining RS in large cylinders. It is pointed out that the Zaks' method for the determination of a complete RS curve may be employed expeditiously on a single D by successively removing layers of material - first by boring and then by turning. In that instance, a complete RS curve is obtained by interpolating the stresses in the internal zone. Application of the modified Zaks' method should be particularly considered in those cases where the RS curves in the outer layer of a cylinder (direct) or in both

Card 2/3

[illegible]

Rational Employment of the Zaks Method (cont.)

the outer and inner layers of a solid cylinder, are characterized by a large RS gradient

1. 4.

### 1. Cylinders-Stresses-Determination

Card 3 / 3



137-58-1-1316

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 176 (USSR)

AUTHORS: Glikman, L. A., Suprun, L. A.

TITLE: On the Development and Mechanism of Corrosion Fatigue Damage  
(K voprosu o razviti i mekhanizme korrozionnoustalostnogo razrusheniya)

PERIODICAL: Tr. Tsentr. n.-i. in-ta morsk. flota, 1956, Nr 5, pp 25-31

ABSTRACT: The problem of the laws of initiation and development of cracks (C) in fatigue failure (FF) of steel subjected to corrosion testing simultaneous with cyclic testing over definite periods of time was investigated at various stress amplitudes. Specimens of Nr 35 carbon steel, previously heat treated by normalization from 850° and subsequent high-temperature tempering at 650°C, were tested. The corrosion medium was fresh water and 3% NaCl solution. It was found that under conditions of corrosion fatigue damage the duration of cyclic testing to the time of appearance of visible C was considerably less than in the FF of steel under ordinary atmospheric conditions. With a 3% NaCl solution, the incubation period for the initiation of C was about 10% of the total number of cycles required for failure, while

Card 1/2

137-58-1-1316

*On the Development and Mechanism of Corrosion Fatigue Damage*

with fresh water it was about 40% and in atmosphere - an about 70-90% of the total time required for FF. This distinctive characteristic of the development of fatigue C is explained by the large number of C in the zone of identical stresses normally observed in addition to the fracture in cases of corrosion FF. The speed of spreading of C once started into the depth of the material increases with an increase in stress amplitude and with an increase in the total number of cycles and also with increase in the corrosiveness of the medium. It is shown that preliminary "exercising" of the specimens in air by cyclic testing for 10 million cycles at a level approaching the  $\sigma_w$  (stress amplitude 27 kg/mm<sup>2</sup>) increases their corrosion fatigue strength by approximately 30%. This confirms the hypothesis that a developing electrochemical inhomogeneity in the preliminary cyclic testing has a considerably smaller effect on the course of the process of corrosion than does the effect of electrochemical inhomogeneity developing when corrosion is present at the same time.

L. U.

1. Steel--Fatigue
2. Steel--Corrosion
3. Steel--Test methods
4. Steel--Test results

Card 2/2

137-58-1-1317

Translation from: Referativnyy zhurnal. Metalurgiya. 1958. Nr 1. p 176 (USSR)

AUTHORS: Glikman, L. A., Suprun, L. A.

TITLE: The Effect of Surface Hardening by Shot Blasting on the Corrosion Fatigue Strength of Steel (Vliyaniye poverkhnostnogo uprochneniya drobestruynoy obrabotkoy na korroziionnoustalostnyu prochnost' stal.)

PERIODICAL: Tr. Tsentr. na i. in-ta morsk. flota. 1956, Nr 5, pp 32-35

ABSTRACT: An investigation was made into the effect of shot blasting on fatigue strength (FS) and corrosion fatigue strength (CFS) of specimens of Nr 35 steel that had undergone prior heat treatment. It was found that shot blasting conducted by any of the procedures in current practice, fully approved for standard fatigue testing, retains a favorable influence for corrosion strength in a 3% NaCl solution only over a limited range of cycles (about  $2 \times 10^6$  cycles). Good protective properties have been demonstrated by a combined protection afforded by shot blasting and by Mg cladding: the CFS proved to be 7% higher than even the FS under atmospheric conditions. From this it follows that to increase the FS of steel products operating under

Card 1/2

137-58-1-1317

The Effect of Surface Hardening (cont.)

the simultaneous effects of variable stresses and corrosion, surface hardening must be applied only in combination with other methods of protection (coatings, or cladding or cathodic protection).

L.U.

1. Steel--Heat treatment
2. Steel--Corrosion
3. Steel--Fatigue
4. Steel--Hardening--Effects

Card 2/2

137-58-1-1335

Translation from: Referativnyy zhurnal: Metallurgiya 1958, Nr 1, p 186 (USSR)

AUTHORS: Glikman, L. A., Subrun, L. A., Bogorad, L. Ya., Gakman, E. L.

TITLE: Effect of Chromium Plating on the Fatigue and Corrosion  
Fatigue Strengths of Steel (Vliyaniye khromirovaniya na ustalostnuyu i korroziionnoustalostnuyu prochnost' stali)

PERIODICAL: Tr. Tsentr. nauch.-issled. in-ta morsk. flot, 1958, Nr 5, pp 36-42

ABSTRACT: The results of an investigation of the effects of the chromium plating procedure employed upon the fatigue strength (FS) and the fatigue corrosion strength (FCS) of specimens of Nr 35 carbon steel subjected to heat treatment are presented. When tested for FCS the midsection of the specimen was in a flowing liquid medium (3% NaCl). Seven chromium platings, differing as to plating procedure and the condition of the Cr coating, were tested. The chromium plating % of all the specimens was performed in a bath with an electrolyte of identical composition (in g/l):  $\text{CrO}_3$  150,  $\text{H}_2\text{SO}_4$  1.5. It was found that C differs in its effect upon FS when tested in air, depending on the plating procedure. For specimens coated with bright and cloudy Cr, significant diminution in the FS of the parent metals was found.

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137-58-1-1095

Effect of Chromium Plating on the Fatigue

which is explained by the presence in the coating of residual tensile stresses, and the positive effect of tempering at 550-600°C was confirmed, as it restored the FS almost completely. In porous chromium plating, no reduction in FS was revealed, and this is explained by the significantly diminished magnitude (due to general development of a network of cracks) of residual tensile stresses in such coating. Corrosion fatigue tests showed that C provides unsatisfactory protection against reduced FS of steel under conditions of corrosion. Tempering after C has virtually no effect on the FCS of steel: all tests revealed a comparatively small difference between the curves for corrosion fatigue of C and of non-chromium-plated specimens. A strict relationship between the corrosion strength and the number of cycles was found to exist in both categories. The use of a supplementary 2-layer Ni and Cu coating beneath the Cr does not improve the protective properties of the coating. A significant improvement in the protection against reduction in FS against corrosion of specimens covered by bright Cr was attained only with a preliminary two-hour heating of the chromium-plated specimens in flaxseed oil at 140-150°. In the opinion of the authors, the unfavorable effect of Cr coatings upon the FCS of steel is explained by the appearance of cracks in the coating under cyclic loads, these cracks serving as channels leading the corrosive medium to the parent metal.

Card 2/2

L. U.

1. Steel-Fatigue 2. Steel-Corrosion 3. Chromium plating-Effects

SOV/124-58-3-3518

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p 130 (USSR)

AUTHOR: Glikman, L. A.

TITLE: Stability of Residual Stresses and Their Effect on Mechanical Properties of Metal and Strength of Components (Ustoychivost' ostatochnykh napryazheniy i ikh vliyaniye na mekhanicheskiye svoystva metalla i prochnost' izdeliy)

PERIODICAL: Tr. Leningr. inzh. ekon. inst. 1956, Nr 13, pp 145-203

ABSTRACT: After analyzing experimental investigations (performed by Glikman as well as by other authors) the results of which are recorded in technical literature the author presents the following conclusions: 1) Stability (preservation) of residual stresses in steels is very great (the reduction amounts to 6-8%) even after prolonged periods at room temperature; at temperatures of 300°C and higher the residual stresses diminish considerably. 2) Under static loading the residual stresses are preserved until the summary stresses (residual stresses plus stresses due to external loads) exceed the elastic limit; the residual stresses are relieved when residual deformations equivalent to 0.5-1% appear. 3) Under cyclic

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SOV/124-58-3-3518

Stability of Residual Stresses (cont )

loading, the residual stresses diminish noticeably when the summary stresses exceed the cyclic elastic limit. Reduction of residual stresses by the action of cyclic loads is not recommended. 4) Strength of plastic materials is not affected by residual stresses; this holds true for materials in uniform as well as nonuniform states of stress. In the case of a uniformly stressed material residual stresses bring about a reduction of the limits of proportionality, elasticity, and yielding. 5) In the case of brittle materials and plastic materials with tendencies toward brittle fracture (under conditions of reduced temperature, increased loading rates, notching) residual stresses always reduce the strength of uniformly stressed materials and, depending on their distribution, either lower or increase the strength of materials which have been stressed nonuniformly. 6) Residual stresses of linear or planar nature do not affect the susceptibility of metals to brittle fracture; residual stresses of three-dimensional character, however, may cause the metal to become brittle. 7) Residual compressive stresses in the surface layer increase fatigue resistance of materials during bending, whereas residual tensile stresses impair this property (by reducing the cycle amplitude at the fatigue limit). Bibliography: 86 references.

A. D. Kovalenko

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**"APPROVED FOR RELEASE: 09/24/2001**

**CIA-RDP86-00513R000500030013-9**

**APPROVED FOR RELEASE: 09/24/2001**

**CIA-RDP86-00513R000500030013-9"**

KASHCHENKO, Georgiy Antonovich, professor; GLIMAN, I. I., professor,  
doktor tekhnicheskikh nauk, redaktor; LEYKINA, T. L., redaktor  
izdatel'stva; BOIKHOVITINOV, N. F., professor, doktor tekhnicheskikh  
nauk, professor, retsenzent; SOKOLOVA, L. V., tekhnicheskiiy redaktor.

[Principles of physical metallurgy] Osnovy metallovedeniia. Izd. 3-e,  
dop. i perer. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry,  
1957. 395 p. (MLRA 10:6)

(Physical metallurgy)

GLIKMAN, L. A.

AUTHOR: Glikman, L.A., Doctor of Technical Sciences, 114-11-5/10  
A.V., Candidate of Technical Sciences and Chizhik, A.I.,  
Engineer.

TITLE: Heat-resistant Materials for Power Machinery Building. (Zharno -  
prochnyye materialy dlya energomashinostroyeniya)

PERIODICAL: Energomashinostroyeniye, 1957, Vol.3, No.11, pp. 22 - 26  
(USSR)

ABSTRACT: The article commences with a statement of the importance of  
studying mechanical properties of metals at high temperatures  
and with a review of early work on this subject in the USSR.

After the war, work developed extensively on the study of the  
properties of heat-resistant materials. New laboratories for  
this purpose were set up in the Central Scientific Research  
Institute of Engineering Technology (TsNIITMASH), the Central  
Scientific Research Institute for Ferrous Metallurgy (TsNIICHERMET)  
at the Neva Works imeni Lenin (NZL), the Kharkov Turbine Works  
(KhtZ) and elsewhere and the laboratories at the Central Boiler  
Turbine Institute (TsKTI) and the Leningrad Metal Works (LMZ)  
were extended. In the solution of metallurgical problems inv-  
olved in the manufacture of new heat-resistant materials, a  
leading part has been played by such enterprises as "Elektrostal",  
Card 1/7 the Ural Engineering Works (Uralsmashzavod), the Neva Works

Heat-resistant Materials for Power Machinery Building.

114-11-5/10

imeni Lenin, the New Kramatorsk Engineering Works (NKMZ) and others.

A detailed study was made of the kinetics of failure over a long time and of the kinetics of structural changes in the properties of materials exposed to high temperatures for a long time. As a result of this work it was possible to draw up a number of analytical relationships. An example is given of such a relationship between the long-term ultimate strength of heat-resistant steel and the temperature. This formula includes a coefficient which varies greatly from one steel to another and appropriate values may be taken from the graph given in Fig. 1. The accumulation of test data on long term failure made it possible to develop the general view of the changes that take place in plastic properties at high temperatures as a function of the mean rate of creep and time to failure. It was shown that the development of inter-crystalline failure with a reduction in the rate of creep or with increase in the test time leads to the appearance of a range of rates of creep in which there is a marked reduction in the plasticity and increase in the brittleness. Changes in the plastic properties of a number of steels as a function of the mean rate of creep are shown in Fig. 2.

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Heat-resistant Materials for Power Machinery Building.

114-11-5/10

Turbine Institute and at Leningrad University resulted in the derivation of a relationship between the quantity of metal reacting with oxygen and the time. A great deal of work was done on the ageing of high alloy steel by study of the structure and properties of a group of steels after lengthy exposure to high temperature. It was shown that, for a number of materials, identical structures can be obtained at different ageing temperatures by altering the test time. For many materials, the structural condition can be related to the impact strength. This is very useful in maintenance work. Procedures have been developed for studying the fatigue strength at high temperatures.

Recently, more attention has been paid to physical methods of investigation, such as determination of thermal conductivity and temperature coefficient of expansion.

Experimental results on creep in pipes under pressure have been compared with results of the usual tension tests and a method has been developed for calculating the equivalent stress in pipes under pressure from the results of tests on ordinary specimens that is applicable to all boiler steels (see Fig.5). The development of the first boilers and turbines for super-high steam conditions provided a great stimulus to the investigation of heat-resistant materials. Examples of heat-resistant

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Heat-resistant Materials for Power Machinery Building.

114-11-5/10

materials which have been developed and investigated in detail and which have found wide application in power engineering are listed in a table. The table lists 16 brands of steel and for each gives the heat treatment, the test temperature, the mechanical properties, the creep limit and the long-term ultimate strength.

In the article special mention is made of certain steels. Steel P-2 is widely used for forged rotors. Another heat-resistant rotor material is chrome-tungsten-molybdenum steel 3M-415 which has high structural stability.

An important pearlitic steel for casting is brand 20XMΦ7 which is used at operating temperatures of up to 540 °C. Use is now beginning to be made of a new cast-chrome-molybdenum-vanadium steel 15X1M1Φ which can be recommended for parts operating at temperatures up to 570 °C. A series of new pearlitic steels has been developed for super-heater tubes and steam pipes. Steel 12XMΦ is intended for operation at temperatures of up to 570 °C is an example and so are steels 3M-531 and 3M-454. A major task at the present time is to extend the use of cheaper steels with favourable technological properties. Work is being carried out on the development of new steels. Particularly interesting results have been obtained with materials based on stainless 12% chromium steel which also contains such elements as molybdenum,

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Heat-resistant Materials for Power Machinery Building. 114-11-5/10

tungsten, vanadium and niobium to a total content of 1-3%. These steels are used after heat treatment. Steels of this kind are 15X11MΦ, 15X12BMΦ and 1X12B2MΦ. Variants of cast-chromium heat-resistant steels are of considerable interest; materials of these kinds are steels X11MΦ and X11MΦA.

Since the war, investigational work and developments in metallurgical work on casting and forging have led to the development of a series of heat-resisting austenitic steels. One of the first of these which has been studied in the most detail is steel 3M-405 which has satisfactory technological properties and sufficiently high heat-resistance to combine with good structural stability. It has been used for the manufacture of blades and a number of other parts of turbines for super-high steam conditions and for gas turbines. During development work on the welded rotor for a gas turbine several large parts were made from this steel using different manufacturing procedures. The parts were subsequently tested at the Leningrad Metal Works and the Central Boiler Turbine Institute and it was found necessary to improve the quality of ingots and the technology of hot working. A good deal of work was done on the welding of this steel. Steel 3M-572 has been manufactured and rolled by the "Elektro-Card5/7stal" Works and investigated in detail by the Central Boiler

Heat-resistant Materials for Power Machinery Building. 114-11-5/10

Turbine Institute. It has a high relaxation stability and low sensitivity to the presence of cuts so that it is very suitable for the manufacture of studs and bolts intended to operate at temperatures of up to 580 °C, and also for large forgings for gas turbine discs and rotors.

Steel 34-612, a chrome-nickel austenitic steel alloyed with tungsten and titanium, has been developed. It has good mechanical properties in the temperature range 20 - 650 °C. The impact strength is maintained at a high value after prolonged ageing at 650 - 700 °C.

A great deal of work has been done on the development and use of cast austenitic steel. One such steel is brand 341 which has high heat-resistance and stability so that it can be used at working temperatures of up to 650 °C. Considerable difficulties had to be overcome in the manufacture of castings of heat-resistant austenitic steels because of their tendency to form films, which leads to the formation of various defects on the surface of the ingots. These defects are found in all existing austenitic heat-resistant steels. Reliable welds can be made of these steels only in regions from which such defects and porosity are completely absent. A good deal of work has been done on cast austenitic steel X25H13T-1 which has been used for

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Heat-resistant Materials for Power Machinery Building

114-11-5/10



617

AUTHORS: Glikman, L.A., Dr. of Technical Sciences, Prof. and Zobachev, Yu. Ye., Candidate of Technical Sciences. (Central Marine Research Institute).

TITLE: Influence of shot peening on the cavitation resistance of metals tested by means of a magneto-striction vibrator. (Vliyaniye drobestruynogo naklepa na kavitatsionnuyu stoykost' metallov pri ispytanni na magnitostriksionnom vibratore).

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.5, pp.38-41. (U.S.S.R.)

ABSTRACT: Grossman (2) found that shot peening has a favourable influence on cavitation resistance but his results were not unequivocal. In this paper the results are described of experiments aimed at studying the influence of shot peening on the cavitation resistance of carbon steels containing 0.4 and 0.53% C, on brass and on an austenitic steel. Specimens were made of these materials which were subjected to cavitation tests on a magnetostriction vibrator after shot peening. The depth of the work hardened layer was 0.2 to 0.25 mm for the austenitic steel and 0.1 to 0.15 mm for the brass. The authors did not detect any appreciable influence of shot peening on the cavitation strength. The shot peened surface layer increases somewhat the resistance of the metal to plastic deformation but this increase

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Influence of shot peening on the cavitation resistance  
of metals tested by means of a magnetostriction  
vibrator. (Cont.) 617

is not large enough to reduce appreciably local plastic deformation caused by the mechanical effect of the hydraulic impacts during the collapse of bubbles. The relatively slight increase in the strength of the surface layer does not compensate the adverse influence caused by the decrease in the corrosion stability of the metal. 4 Tables; 5 Russian, 1 American references.

Card 2/2

129-10-9/12  
AUTHOR: Glikman, L.A., Doctor of Technical Sciences, Professor,  
and Babayev, A.N., Candidate of Technical Sciences.  
TITLE: Cases of fatigue fractures of marine shafts. (Ustalostnaya  
prochnost' obraztsov, naplavlennykh avtomaticheskoy svarkoy  
pod flyusom)

PERIODICAL: "Metallovedeniye i Obrabotka Metallov" (Metallurgy and  
Metal Treatment), 1957, No.10, pp.37-45 (U.S.S.R.)

ABSTRACT: There were cases of fatigue fractures of marine shafts  
which, after wear and corrosion, were dimensionally restored  
by welding. Therefore, the authors decided to determine the  
fatigue strength of specimens with deposits produced by automatic welding  
under flux. Earlier, one of the authors (3) studied the tech-  
nology and the method of selection of welding regimes, aimed  
at obtaining the necessary mechanical properties and absence  
of cracks in the thermally influenced zone and in the weld zone.  
Furthermore, the influence was studied of the temperature of  
preliminary heating and also of the geometry of the weld deposit  
on the magnitude and distribution of the residual stress.  
The experiments were made with specimens of 60 mm dia. since  
preliminary tests showed that this diameter permitted welding  
along the generatrix, along a spiral at an angle of 45° and  
along a ring. The specimens were made of steel 40, the compo-

Card 1/3

Cases of fatigue fractures of marine shafts. 129-10-9/12  
(Cont.)

sition of which was as follows: 0.4% C, 0.26% Si, 0.57% Mn, 0.033% S and 0.022% P; the mechanical properties after annealing at 840 C were  $\sigma_s = 28 \text{ kg/mm}^2$ ,  $\sigma_b = 58 \text{ kg/mm}^2$ ,  $\delta_5 = 25\%$  and  $\psi = 45\%$ . The welding was effected with direct current of reverse polarity. The graph, Fig. 2, shows the results of fatigue tests of specimens in the original state, after restoration by welding along the generatrix, after restoration by welding along the spiral at  $45^\circ$ , after restoration by welding along the ring and also after restoration by means of rolls and restoration followed by work-hardening by means of rolls and restoration by welding followed by tempering for two hours at 630 C. The various mechanical properties, after different regimes of restoration and treatment, are plotted in the graphs, Figs. 3 to 6. It was found that the fatigue limit of specimens with weld deposits amounted to only about 36% of the fatigue limit of the metal in the original state and was independent of the angle between the direction of feeding the weld deposit and the specimen axis. Tempering for 2 hours at 630 C improves the fatigue limit of the specimens with weld deposits to  $10 \text{ kg/mm}^2$ , whilst for specimens which were work-hardened by rolls with a pressure of 600 kg the fatigue limit increased to  $14 \text{ kg/mm}^2$ ; these values represent 44% and 64% respectively of the fatigue

Card 2/3

129-10-9/12  
Cases of fatigue fractures of marine shafts. (Cont.)  
limit of the metal in the original state. The most likely  
cause of the low fatigue limit of the specimens with weld  
deposits consists of the simultaneous action of residual ten-  
sile stresses and welding defects which play the rôle of stress  
concentrators; these defects are, in the given case, of funda-  
mental importance.

There are 6 figures, 2 tables and 10 references, 9 of which  
are Slavic.  
ASSOCIATION: Central Marine Scientific Research Institute (TsNII)  
and Leningrad Ship-building Institute (Leningradskiy  
Korablistroitelnyy Institut)

AVAILABLE: Library of Congress

Card 3/3

GLIKMAN, L.A.; SUPRUN, L.A.; KOSTROV, Ye.N.

Method for corrosion fatigue testing of specimens 60mm in diameter.  
Zav. lab. 23 no.3:343-345 '57. (MIRA 10:6)  
(Corrosion and anticorrosives) (Metals--Fatigue)

GLIKMAN, L. A.

32-9-21/43

AUTHOR: Kolgatin, M.N., Glikman, L.A., Teodorovich, V.F.  
 TITLE: A Method for Long-Duration Tension Tests of Tube-Shaped Samples With Internal Hydrogen Pressures at High Temperatures (Metodika dlitel'nykh ispytaniy na razryv trubchatykh obraztsov pod vnutrennim davleniyem vodoroda pri vysokikh temperaturakh)  
 PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 9, pp 1098-1101 (USSR)  
 ABSTRACT: A special plant and a special method of investigation, by which internal hydrogen pressures and the influence exercised by them on the refractoriness of the tubes (or, to be more accurate, upon their fatigue limit) are developed. There follows a description of the plants and of the experimental method. The sample is heated in an electric furnace up to the given temperature for 4-5 hours with a subsequent pause of 1 hour. Next, hydrogen is introduced through a valve until in the sample any pressure corresponding to the amount of tension in the walls of the sample is attained. The amount of this tension is computed according to a formula. In order to ascertain the influence exercised by hydrogen upon the fatigue limit analogous investigations were carried out in nitrogen. It is shown that hydrogen exercises a considerable influence upon the reduction of the fatigue limit of steel "20" at 200, 450 and 500°C. At all test temperatures and different times needed for the tearing of

Card 1/2

32-9-21/43

A Method for Long-Duration Tension Tests of Tube-Shaped Samples With Internal Hydrogen Pressures at High Temperatures

the samples of steel "20" in hydrogen, the character of destruction was observed to be brittle. An investigation of the same type of steel in nitrogen during a relatively short duration of tearing showed that the destruction of the tubes was accompanied by considerable plastic deformation. It was found that the destruction of steel "20" with internal hydrogen pressure always takes place at the granular boundaries. The plant described permits a simultaneous investigation of a relatively large number of samples of tubes. There are 7 figures and 7 references, 3 of which are Slavic.

ASSOCIATION: Leningrad Institute for Petroleum Refining and for the Production of Artificial Liquid Fuels (Leningradskiy institut po pererabotke nefi i polucheniya iskusstvennogo zhidkogo topliva)

AVAILABLE: Library of Congress

Card 2/2



121-44-6-9/17  
 AUTHORS: Glikman, L. A., Doctor of Technical Sciences, Professor  
 and Ishakov, A. N., Candidate of Technical Sciences.  
 TITLE: Investigation of the Radiation Surface of the  
 Fuel of the Reactor of the U.S.S.R. (1964)  
 (Isotopovye izmereniya izlucheniya sverkhkriticheskogo  
 reaktora s vodoplazmennym reaktivom)  
 PERIODICAL: Izotopovaya i Obshchaya Khimiya, 1964, No. 1,  
 pp. 21-27 (USSR)  
 ABSTRACT: The radiation surface of the fuel of the  
 by which was studied by the method of the  
 of the fuel (K. A. Glikman, A. N. Ishakov, 1964).  
 the outside layer was determined by the method of  
 Benin and Bogdanov. It was found that the  
 and effect when measuring the radiation surface of the  
 therefore, this indicated the presence of a  
 residual current. In the case of the fuel of the  
 was also studied by a similar method. It was  
 specimens which were of the type of the fuel of the  
 the structure. The results of the measurements of the  
 paper enable a comparison of the radiation surface of the  
 Card 1/4 outside layer (surface of the fuel of the reactor).



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Card 3/4

1. The following information was obtained from the  
 2. Report of the U.S. Navy, dated 1960, titled "The  
 3. Effect of Temperature on the Strength of Steel"  
 4. (Navy Research and Development Command, Report No. 10-60-100)  
 5. The report states that the strength of steel decreases  
 6. as the temperature increases, and that the rate of decrease  
 7. is greater at higher temperatures. The report also states  
 8. that the strength of steel is affected by the rate of cooling,  
 9. and that the strength of steel is affected by the type of steel.  
 10. The report also states that the strength of steel is affected  
 11. by the type of weld, and that the strength of steel is affected  
 12. by the type of joint.

13. The report also states that the strength of steel is affected  
 14. by the type of joint, and that the strength of steel is affected  
 15. by the type of joint. (Source: Merchant Marine Scientific Research  
 16. Institute.)

17. AVAILABLE: Library of Congress.

18. 1. Welds-Stresses-Test results 2. Welds-Facing-Stress Analysis  
 19. Card 4/6

GLIKMAN, L.A., doktor tekhn.nauk, prof.; BABAYEV, A.M., kand.tekhn.nauk

Investigating residual stresses in steel cylinders caused by  
building up the surface by means of automatic welding with  
flux. Trudy LEBI no.23:18-26 '58. (MIRA 12:5)  
(Strains and stresses) (Electric welding)

GLIKMAN, L.A., doktor tekhn.nauk, prof.; KOSTROV, Ye.N., inzh., aspirant

Effect of the scale factor on the fatigue strength of steel.  
Trudy LIEI no.23:27-45 '58. (MIRA 12:5)

1. Tsentral'nyy nauchno-issledovatel'skiy institut Morskogo  
flota (for Kostrov).  
(Steel--Fatigue)

GLIKMAN, L.A., doktor tekhn.nauk, prof.

Problem of the physical nature of mechanical aging. Trudy LIXI  
no.23:118-123 '58. (MIRA 12:5)  
(Metals--Testing)

GLIKMAN, L.A.; KOSTROV, Ye.N.; SUPRUN, L.A.; YELIN, I.A.; SHCHERBAKOV, P.S.;  
ZOBACHEV, Yu.Ye.; DOBREH, V.K.; STRUMPE, P.I., kand. tekhn. nauk, otv.  
red.; ARAKELOV, V.M., nauchnyy red.; BAMA, N.G., red.; KOTLYAKOVA, O.I.,  
tekhn. red.

[Organization and technology of ship repair; corrosion and  
mechanical strength of metals] Organizatsiya i tekhnologiya  
sudoremonta; voprosy korrozionno-mekhanicheskoi prachnosti  
metallov. Leningrad, Izd-vo Morskoi transport 1959. 76 p.  
(Leningrad. tsentral'nyi nauchno-issledovatel'skii institut  
morskogo flota. Trudy no.22) (MIRA 12:5)  
(Metals--Testing) (Corrosion and anticorrosives)



35:128

GLIMAN L A

PLAN I BOOK EXPOSITION DIV/STC

Metallurgy; abstract study, No. 5 (Physical Metallurgy Collection of Articles, No. 5), Leningrad, Gidropress, 1979. 500 p. 5) All copies retained.

Ed.: O. I. Egorin, Candidate of Technical Sciences; Library and Tech. Mil. S. I. Borovskikh.

PURPOSE: This collection of articles is intended for scientific personnel at research and educational institutions and technical plants and also for advanced students.

CONTENT: The articles report the results of investigations of the effect of mechanical loading on the susceptibility of metallurgical and heat-resistant steels and titanium alloys to brittle failure at various temperatures under various conditions of loading (long-time, short-time, cyclic, impact), properties, structure, and condition of alloys as related to their mechanical properties, and 3) corrosion resistance and evaluation of the effect of mechanical loading on the corrosion resistance of alloys. The articles are accompanied by abstracts of Soviet and non-Soviet references. No personalities are mentioned.

Zav'yakov, A. S., Doctor of Technical Sciences, Professor. Study of Steel-Metallurgical Processes During Heating and the Effect of Alloying Elements on Them.

Topolov, I. A., Candidate of Technical Sciences; S. N. Golov, Engineer and Ye. A. Minosheva, Technician. Effect of Micro-Alloying on the Brittleness of Chrom-Molybdenum-Vanadium Steel.

Kozlov, I. A., Doctor of Technical Sciences; and V. I. Kuznetsov, Engineer. Mechanism of Hydrogen Embrittlement in Steel.

Glitsin, L. A., Doctor of Technical Sciences, Professor; V. S. Kuznetsov, Engineer; V. P. Prokhorov, Candidate of Technical Sciences; and V. I. Derzhakova, Engineer. Change in Mechanical Properties of Steel Under the Action of Hydrogen at High Temperatures and Pressures.

Kozlov, I. A., and Ye. D. Kozlov, Engineer. Investigation of the Mechanism of Hydrogen Embrittlement of Titanium and Its Alloys.

Shchegolev, S. I., Candidate of Technical Sciences. Role of Intergranular Structures in the Heat Treatment of Medium Alloy Constructional Steel.

Gol'dshteyn, L. M., Engineer. Stability of Dimensions and Properties of Tempered Steel.

Kozlovskiy, A. L., Candidate of Technical Sciences. Aluminizing and Phosphorizing Steels in Quenching Media.

Chernovskiy, V. I., Engineer. Susceptibility of Titanium and Its Alloys to Brittle Failure Under Impact Loading.

Chernikova, E. P., Candidate of Technical Sciences. Investigation of the Mechanism of Brittle Failure of Steels and Titanium Alloys Under the Action of the First Failure Crack in Testing Steel for Mechanical Properties.

Meshkov, P. G., Doctor of Technical Sciences, Professor. New Researches on the Strength of Metals as Related to Their Metallization.

Orlov, S. N., Candidate of Technical Sciences. Investigation of the Brittleness of Chromium-Manganese Martensite and Tempering of Chromium-Manganese Steel.

307/129-59-3-5/16

AUTHORS Koligatin N.H. Engineer, Glikman, L.A. Doctor of Technical Sciences Professor, Teodorovich, V.P., Candidate of Chemical Sciences and Deryabina, V.I., Engineer

TITLE Sustained Strength of Steels During Investigation of Tubular Specimens Subjected to an Internal Pressure of Hydrogen at Elevated Temperatures (Dlitelnaya prochnost staey pri ispytaniy trubchatykh obratsoy pod vnutrennyam davleniyem vodoroda pri vysokikh temperaturakh)

PERIODICAL Metallovedeniye i Termicheskaya Obrabotka Metallov, 1959, Nr 3, pp 19 - 24 (USSR)

ABSTRACT A.A. Zakharov (Ref 1) and Sh.N. Kars (Ref 2) have established that in certain calculations of the stresses in tubes subjected to internal pressures by a neutral medium the sustained strength at elevated temperatures equals the sustained strength in ordinary tensile tests. Therefore it is possible to use the results of sustained tensile tests for calculating the permissible stresses. In a number of cases the permissible stresses can be chosen correctly only by taking into consideration the

Card 1/5

SOV/129-99-5-5/16

Sustained Strength of Steels During Investigation of Tubular  
Specimens Subjected to an Internal Pressure of Hydrogen at  
Elevated Temperatures

influence of the aggressive media which produce the internal pressures inside the tubes at the particular elevated temperatures. Of such aggressive media, hydrogen is of considerable importance. The authors of this paper have produced a test rig and evolved a method of testing for sustained failure of tubular specimens which are subjected to internal pressure of various media at elevated temperatures. This test rig has been described in earlier work of some of the authors of this paper (Ref 3). In the here described work it was applied for studying the sustained strength of tubular specimens of various steels subjected to internal pressure of hydrogen and nitrogen at elevated temperatures. As a neutral medium, molecular nitrogen was chosen which enabled evaluating the influence of hydrogen on the sustained strength of the tubes. The chemical compositions and the mechanical properties of the investigated (8) steels are entered in Tables 1 and 2. In addition to these, steel containing 6% Cr

Card2/5

SOV/129-59-3-5/16

Sustained Strength of Steels During Investigation of Tubular  
Specimens Subjected to an Internal Pressure of Hydrogen at  
Elevated Temperatures

and supplementary additions of W, V, Mo and Nb was  
studied. Of the eight materials enumerated in Table 1,  
the tests on commercial iron were carried out at  
450 °C and the respective results are graphed in  
Figure 1. A sharp drop in the sustained strength was  
observed for tubular specimens subjected to internal  
pressure of hydrogen, brittle failure with a pronounced  
intercrystallite character was observed, whilst in  
equal specimens subjected to internal pressure with  
nitrogen the failure was accompanied by appreciable  
plastic deformation and the failure was intracrystalline.  
The results for the other materials tested are also  
graphed. On the basis of the measured strength data  
for sustained loading for durations of 1 000 and 10 000  
hours it can be concluded that hydrogen has a considerable  
influence on the reduction of the sustained strength,  
particularly in the case of commercial iron and steel 20;  
at 450 °C these materials suffered a loss of 75 to 85%  
Card 3/5 of their sustained strength. For low and medium alloy steels

2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2687, 2688, 26

Card 44.4t

SDV/124 50-3 5/16

Study of the Effect of Stress on the Investigation of Tubular  
Spectrometric Analysis of the Influence of Hydrogen on  
Electrochemical Processes

The study of the effect of stress on the investigation of tubular  
spectrometric analysis of the influence of hydrogen on  
electrochemical processes is carried out in the form of the grain.  
The study of the effect of stress on the investigation of tubular  
spectrometric analysis of the influence of hydrogen on  
electrochemical processes is carried out in the form of the grain.  
The study of the effect of stress on the investigation of tubular  
spectrometric analysis of the influence of hydrogen on  
electrochemical processes is carried out in the form of the grain.

ASSOCIATION: The study of the effect of stress on the investigation of tubular  
spectrometric analysis of the influence of hydrogen on  
electrochemical processes is carried out in the form of the grain.  
The study of the effect of stress on the investigation of tubular  
spectrometric analysis of the influence of hydrogen on  
electrochemical processes is carried out in the form of the grain.  
The study of the effect of stress on the investigation of tubular  
spectrometric analysis of the influence of hydrogen on  
electrochemical processes is carried out in the form of the grain.

Card 1

GLIKMAN, L.A., doktor tekhn.nauk, prof.; KOLGATIN, N.N., inzh.; TEODOROVICH,  
V.P., kand.khimicheskikh nauk; DERYABINA, V.I., inzh.

Changes in the mechanical properties of certain steels under  
the effect of hydrogen at high temperatures and pressures.

Metallovedenie 3:58-73 '59.

(MIRA 14:3)

(Steel—Hydrogen content)

(Metals at high temperature)



28(5)

SOV/51-25-4-51/71

AUTHORS: Glikman, L. A., Kostrov, Ye. N., Dobre., V. K.

TITLE: Tests for Corrosion Fatigue in Bending and Torsion (Ob ispytaniyakh na korrozionnuyu ustalost' pri izgibe i pri kruchenii)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 4, pp 456-460 (USSR)

ABSTRACT: The tests were carried out in common with the metal laboratory of the "Elektrosila" Works. The problem of relationship between the fatigue limits in torsion and bending under the simultaneous effect of corrosion has not been much investigated up to date, and the results (Refs 3,4) are contradictory. For this reason, special investigations of steel 35 (0.35% C, 0.12% Si, 0.77% Mn, 0.027% S and 0.022% P) were carried out in this case. The samples were made of a long bar (diameter 25 mm); they were submitted to normalizing at 850-870°C and had the following characteristics:  $\sigma_B = 53.1 \text{ kg/mm}^2$ ,  $\sigma_B = 62.1 \text{ kg/mm}^2$ ,  $\delta_5 = 27.4\%$  and  $\psi = 60.1\%$ . The sketch of a sample is given (Fig 1). The transverse fatigue tests were carried out on machines of the type NU at a sample rotation speed of 3000 rpm. The torsion tests were made on an especially designed machine (according to V. K. Doreer, Engineer) with a certain load

Card 1/2

SOV/32-25-4-31/71

Tests for Corrosion Fatigue in Bending and Torsion

moment (Fig 2). The working principle of the machine consists in the fact that by an eccentrically loaded, rotating vertical axis a torsional moment varying in magnitude and direction is produced on the sample. The frequency of the load cycles is determined by the speed of the electric motor driving the vertical axis, and amounted to 2500-2500 cycles/minute. The corrosion agent was a 3% NaCl solution, and parallel tests with air were made. V. V. Marugin (Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota) (Central Scientific Research Institute of the Merchant Marine) and Ye. A. Suvorova (zaved "Elektro-... works) took part in the experiments. The fatigue curves obtained show that the corrosion-fatigue resistance greatly depends on the number of load cycles. The test results obtained show, among other things, that the relationship between the corrosion-fatigue resistance in bending and torsion remains the same for corrosion-resistant materials. There are 4 figures and 8 references, 6 of which are Soviet.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota  
Card 2/2 (Central Scientific Research Institute of the Merchant Marine)

80(5)

DOV/22-21-7-10/10

AUTHORS:

Davidenko, N. N. Academician of the AS USSR, Vitsan, P. F. Professor, Doctor of Physical and Mathematical Sciences, Glikman, L. A. Professor, Doctor of Technical Sciences, Fridman, Ya. E. Professor, Doctor of Technical Sciences, Miroslavov, I. N. Candidate of Technical Sciences, Rubev, I. A. Senior Scientific Collaborator

TITLE:

Yevgeniy Mikhaylovich Shevandin (Yevgeniy Mikhaylovich Shevandin)

PERIODICAL:

Zavodskaya laboratoriya, 1958, Vol 25, No 7, p 696 (USSR)

ABSTRACT:

This is an obituary written on the occasion of the death of the scientist mentioned in the title. Shevandin was one of the leading scientists in the field of material mechanics; he became famous for his investigations of the nature of destruction by brittleness and the phenomena of destruction by brittleness of metals at low temperatures carried out at the Fiziko-tekhnicheskiy institut (Physical and Technical Institute). After 1945 the deceased dealt with the problems of cold-shortness of ferrous metals which are of great importance in ship-building. Ya. M. Shevandin published two manuals on the mechanical properties of metals as well as

Card 1/2

SCV/32-25-7-50/50

Yevgeniy Mikhaylovich Shevandin

more than 50 original papers. His monograph "Tendency of  
Low-alloy Steels Towards Brittleness" was published in 1953.

Card 2/2

PHASE I BOOK EXPLOITATION

307/4591

Leningrad. Inzhenerno-ekonomicheskii institut

Chistotaya obrabotka i sostoyaniye obrabotannoy poverkhnosti (Finishing Operations and Surface Roughness) [Leningrad] Izd-vo Leningr. univ-ta, 1960. 268 p.  
(Series: Its: Trudy, vyp. 30) 1,825 copies printed.

Ed. (Title page): A.A. Matalin, Professor; Ed. (Inside book): G.M. Aron; Tech. Ed.: S.D. Vodolagina.

NOTE: This collection of articles is intended for technical personnel in the machine-building industry and for students in schools of higher technical education.

COVERAGE: The collection contains articles on the problems of developing methods of mechanical machining (such as grinding and superfinishing with strain hardening, roll burnishing, fine grinding, etc.) which would serve to increase the life of machine parts exposed to friction and wear, and thereby insure high productivity and economy. Methods for determining residual stresses (only in macrostresses and microstresses) are discussed in detail. Also considered are the possibility

Card 1/4

Finishing Operations and Surface Roughness

SOV/4501

of using hydraulically actuated slide rests in lot production, the use of the group machining method, and an attachment for program control of an existing lathe which would not necessitate modernization of the lathe. A description of advanced production methods and work planning used in plants of the German Democratic Republic is presented. No personalities are mentioned. References accompany most of the articles.

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AVAILABLE: Library of Congress

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PAPERBACK \$14.95  
HARDCOVER \$24.95

Soveshcheniya po ustoičnosti sostoyaniya. Od., 1989, 1990.

[illegible]

Resp. Ed.: I. A. Odintsov, Corresponding Member of the Academy of Sciences of the USSR; Ed. of Publishing House: A. M. Gurevich; Tech. Ed.: A. P. Gerasova.

PURPOSE: This collection of articles is intended for scientific research workers and specialists.

COVERAGE: The collection contains papers presented and discussed at the second conference on Fatigue of Metals, which was held at the Institute of Metallurgy in May 1960. These papers deal with the nature of Fatigue fracture, the mechanism of formation

Card 1/4

Cyclic Metal Strength (Cont.)

1970-1975

and growth of fatigue cracks, the role of plastic deformation in fatigue fracture, an analysis of the effect of deformation on fatigue strength, the plasticity of metals under cyclic loading, various fatigue test methods, data on the effect of stress on the sensitivity of high-strength materials to fatigue crack growth, the effect of stress concentration on the initiation of fatigue failure, the effect of the stress concentration on the growth of metal under cyclic loads, and results of experimental data of various machine parts. Problems connected with cyclic metal toughness, internal friction, and the effect of corrosion media and temperature on the fatigue strength of metals are also discussed. No personalities are mentioned. Each article is accompanied by references, mostly Soviet.

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NATURE OF FATIGUE FRACTURE

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Cyclic Metal Strength (Cont.)

SOV/6025

EFFECT OF THE STRESS CONCENTRATION  
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GLIKMAN, L.A.; TEODOROVICH, V.P.; KOLGATIN, N.N.; DERYABINA, V.I.

Long-duration strength of some steels in the testing of tubular specimens under internal pressure of hydrogen at high temperatures. Khim.sera-i azotorg.soed.sod.v نفت. i nefteprod. 3:439-450 '60.

(MIRA 14:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov.

(Steel--Testing)

(Hydrogen)

188280 1096 4573383

S/032/61/027/006/010/018  
0124/001

AUTHORS: Tyshchenko, I. I., and  
G. I. G. G.

TITLE: The problem of the stability of the  
equilibrium of a thin plate.

PERIODICAL: Izvestiya Akademii Nauk SSSR, No. 1,  
1961, 7/1 - 10.

TEXT: One of the authors previously has, in the paper, Tyshchenko, I. I.,  
Oprezheniye zakrytykh i otvornykh troiougolnykh i krayevykh  
vstavlyayemykh (determinatsiya i osnovednyye svoystva) i  
materialy by the instant and others. Family Tyshchenko, I. I.,  
Issledovaniya po teorii izogibaniya i krayevykh vstavlyayemykh  
a single and others. The results of the investigation of the  
of a thin plate (with a value of  $\nu = 0.3$ ) and the results of the  
the principal of stability of a thin plate under the action of the  
surface layer of the plate equivalent to the uniaxial compression in the level

Card 1/6

Method of determining the flow...

of the flow limit. A constant  $\sigma_T$  is the equivalence of the flow limit  $\sigma_T$  that the bulge  $q$  at elongation is equal to the contraction  $q$  at elongation, which results from the constant volume in plastic deformation. The flow limit  $\sigma_T = 0.2\%$  at elongation is, at constant deformation tolerance,  $\epsilon = \Psi = 0.2\%$ . Constant deformation is attained with the use of a point with constant indentation angle. When indenting a conical point in the metal, its surface 1/4 of the thickness  $t_0$ , limited by a circle of the radius  $r$ , is deformed, which results in a transformation of the disk to a conical funnel with the radius  $l$  and the thickness  $t_1$ . The equation  $q = 1 - r/l = 1 - \sin(\alpha/2)$  gives, for  $q = 0.2\%$ , a vertex angle  $\alpha = 17^\circ$ . As a cone with such a vertex angle gives indistinct, poorly measurable indentations, an equivalent fruncated pyramid with a vertex angle of  $170^\circ$  was chosen, which, in the following, will be called  $\alpha$ -pyramid. It was experimentally found that for this pyramid the ratio  $\sigma_T/H$  ( $\sigma_T$  being the flow limit at elongation, and  $H$  the mean contact pressure of the truncated cone) is very near 0.33. When determining the flow limit by indentation of the  $\alpha$ -pyramid, a load of  $P = 3000$  kg is used, and the mean

Card 2/3

Method of determining the flow

1. 1/1  
2. 1/1  
3. 1/1  
4. 1/1

Length of the channel is determined by the distance between the  
 $H_0 = 1/1$  and  $H_1 = 1/1$  is calculated. The distance between the  
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For the 1/1/1971 date, the information is not available.  
determined for the 1/1/1971 date. The information is not  
the method used for the 1/1/1971 date. The information is not  
correlation method used for the 1/1/1971 date. The information is not  
There are no other dates mentioned in the report.  
Conclusion:

Card 1/1



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2005  
01/17/2000/007068/012  
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AUTHORS: Glikman, L. A., Tsvetkovskiy, V. I., Kuznetsov, N. S., Laryagina, V. I.

TITLE: Mechanical properties of alloys of iron with hydrogen and certain other elements.

PERIODICAL: Referativnyi zhurnal, Metallografiya, No. 3, 1981, 3, abstract 7133 (in the collection: Khimiya i fizika azotirovaniya, konditsionirovaniya, podvezheniya i razluga i et al. (proceedings), Vol. 3, 1981, 060, 43-432).

TEXT: The influence of hydrogen was investigated upon Armco iron with composition (in %): C 0.03, Si 0.19, Mn 0.25, S 0.20 at 400 and 450°C - C 0.23, Si 0.34, Mn 0.41, S 0.13, Ni 0.1 and on alloy steels X2CrNiMo17-1 - C 0.17, Si 0.22, Mn 0.64, S 0.13, Ni 0.2, W 0.8, Mo 0.46, X2CrNiMo17-1 - C 0.12, Si 0.74, Mn 1.15, S 0.17, Ni 0.3, W 0.4 and 45CrNiMo3 - C 0.45, Si 0.13, Mn 0.7, Al 0.1. Besides, on steel with additional traces of V, W, Mo and Ni X2CrNiMo17-1 was investigated. Almost in all saturated specimens of Armco iron and 45CrNiMo3 the flow surface is absent at transition

and /2

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17/6/000/000/000/002  
4010/400

Mechanical properties of cold-chambered steel...

Subsequent normalizing restores the flow surface,  $\sigma_{\text{fl}}$  of st. 20 is reduced by half as result of the hydrogen attack, and ductility is almost completely absent. As result of the heat after-treatment,  $\sigma_{\text{fl}}$ ,  $\delta$ ,  $\psi$  are increased at their values remain below the original values. After the hydrogen saturation  $\sigma_{\text{fl}}$  is greatly lowered. The opening of hydrogen saturated armature and st. 20 occurs with manifestation of a brittleness effect. The steel is loaded without noticeable traces of plastic deformation. Steel 40X is particularly subject to hydrogen crushing.  $\sigma_{\text{fl}}$  decreases from 48.0 to 45 kg/cm<sup>2</sup>,  $\sigma_{\text{b}}$  - from 48.0 to 38.0 kg/cm<sup>2</sup>,  $\delta$  - from 39.2 to 7.2 %,  $\psi$  - from 62.0 to 9.0 %, and  $\alpha_{\text{K}}$  - from 12.9 to 2.2 kg-cm/cm<sup>2</sup>. The strength properties of cold-chambered, K: 2 MPa and 100.8 MPa decrease slightly and the ductility properties decrease noticeably.

1. Introduction

[Abstracter's note: Complete translation]

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GLIKMAN, L.A., doktor tekhn.nauk; TEKHT, V.P., kand. tekhn.nauk

Effect of intermediate heatings during the fatigue process in  
steel on its durability. Trudy LME no. 9:177-186 '62.

(MIRA 1600)

(Steel--Fatigue)

(Annealing of metals)

GLIKMAN, L.A., doktor tekhn.nauk; BABAYEV, A.N., kand.tekhn.nauk;  
KOSTROV, Ye.N., kand.tekhn.nauk; DAMASKINA, O.L., inzh.

Fatigue strength and residual stresses in steel specimens  
surfaced with 1Kh13 high-chromium stainless steel. Trudy LMZ  
no.9:138-151 '62. (MIRA 16:6)  
(Steel--Fatigue) (Thermal stresses)

GLIKMAN, L.A., doktor tekhn.nauk; TEKHT, V.P., kandydat nauch.  
NAZAROVA, Ye.I., inzh.

Removal of residual stresses in titanium alloys with 1% content  
of aluminum by means of tempering. Trudy IIL, no. 8, p. 180, 1961.

(Titanium alloys--Heat treatment--Stress relief--Aluminum--Titanium alloys)

GLIKMAN, L.A., doktor tekhn.nauk: BUKHARIN, L.I., inzh., - A. RIBA, E. V.,  
inzh.

Effect of hydrogen absorption during generation of slag on the  
brittle strength of rapid steel. (MIRA, 1974, 13, 1, 1-4).  
(Steel-Hydrogen content) (MIRA, 1974, 13, 1, 1-4)

S/137/62/006/011/034/045  
A006/A101

AUTHORS: Glikman, L. A., Kestrov, Ye. B.

TITLE: The effect of the scale factor upon the corrosion-fatigue strength of metals

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 11, 1962, 113 - 114, abstract 111741 (In collection: "Tsiklich. prochnost' metallov", Moscow, AN SSSR, 1962, 187-196)

TEXT: The authors studied the effect of the scale factor upon the corrosion-fatigue resistance in sea water of the following materials: structural carbon steel CT 40 (St 40) in annealed state, structural Cr-Mn-steel 40 Kh (40KhN), stainless austenitic steel 1 Kh18N9 T (1Kh18N9T) in rolled state, brass LAMTSK 55-3-1 (LMTsZh55-3-1) and LAMTSK 67-5-2-2 (LMTsZh67-5-2-2) in cast state. Results are presented on variations of the corrosion-fatigue strength of all materials under atmospheric conditions, in 3% NaCl (imitating sea water) and fresh water, depending upon the frequency of cycles, the shape and dimension of specimens. The process of corrosion-fatigue failure is determined by the interaction

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The effect of the scale factor upon the...

8/17/66/000/011/034/045  
A000/AL-1

of 2 factors: namely, the corrosion and the mechanical factor. Then the relative share of these factors, under otherwise equal conditions (material, frequency of cycles, shape and dimension of specimens, corrosion medium), depends upon the basis of the cyclic effect. There are 16 references.

N. Lukashina

[Abstracter's note: Complete translation]

Card 2/2



GLIKMAN, L.A.; BABAYEV, A.N.

Stability of residual stresses occurring during shot peening  
in conditions of cyclic loading. Trudy LKI no.3843-74 162.

(MLA 16:7)

1. Kafedra svarki sudovykh konstruktov Leningradskogo  
kondlestr itilnogo instituta.

(Shot peening)

(Strains and stresses)

S/277/63/000/001/003/017  
A052/A126

AUTHORS: Glikman, L. A., Kostrov, Ye. N.

TITLE: Effect of size factor on corrosion-fatigue strength of metals

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk, 48. Mashinostroitel'nyye materialy, konstruktsii i raschet detaley mashin, no. 1, 1963, 4, abstract 1.48.20 (In collection: "Tsiklich. prochnost' metallov", M., AN SSSR, 1962, 187 - 198)

TEXT: The effect of the size factor on corrosion-fatigue strength of carbon steel, 40XH (40KhN) Cr-Ni structural steel, 1X18H9T (1Kh18N9T) stainless austenitic steel, ЛМДХ55-3-1 (LMtsZh55-3-1) and ЛАМДХ 67-5-2-2 (LAMtsZh67-5-2-2) brass was studied in 3% NaCl solution simulating sea water on an HЦ (HTs) machine at rotational bending. It is pointed out that under atmospheric conditions all materials studied showed the usual effect of the size factor reflecting in the reduction of fatigue strength with the increase of the diameter of samples from 9 - 10 to 60 - 70 mm. For structural steels 40 and 40Kh with the increase of the diameter of samples from 9 to 55 - 60 mm at a low-

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Effect of size factor on...

3/27/63/000/001/003/017  
A052/A126

base cyclic stress in 3% NaCl solution the usual effect of the size factor is also observed. Beginning with a certain base of cyclic stress and at its further increase a positive effect of the size factor is observed, viz. the corrosion-fatigue strength of large samples is higher than that of small ones. With the increase of the diameter of samples from 10 to 60 mm the effect of the size factor on fatigue strength of 1Kh13N9T stainless steel at a simultaneous corrosion in 3% NaCl solution proved to be qualitatively the same as under atmospheric conditions. With the increase of the cyclic stress base the negative effect of the size factor on corrosion-fatigue strength of this steel intensifies due to the crevice corrosion effect mainly in large samples. Fatigue tests in 3% NaCl solution of cast brass grades LMTsZh and LAMtsZh show that the effect of the size factor under these conditions is considerably lower than in the air. The results obtained in this study confirm the supported conceptions that the process of corrosion-fatigue breakdown is determined by the interaction of corrosion and mechanical factors. Thereby the relative part played by these factors, other conditions being equal (material, cycle frequency, shape and dimensions of samples, corrosion medium) depend on the cyclic stress base. There are 16 references.

[Abstracter's note: Complete translation]

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